

Service Manual

U1

AM/FM 2 BANDS ULTRA RUGGED RADIO RECEIVER

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SPECIFICATION

FM. ELECTRICAL PERFORMANCE

Model: U-1(UL/CE)		Brand: SANGEAN		Temp: 25 °C		R. H. : 75 %		Date: 2003/8/16	
Test Item		Condition			Value		Test No.		Unit
		Input	Output	freq	Nom.	Lim.	1.	2.	
Tuning Range				Min	87	+0.5			MHz
				Max	108.5	+0.5			
Intermediate freq.					10.7	+0.1			MHz
Max. Sensitivity			S/N=6dB	90	12	18			dB μ
				98	12	18			
				106	12	18			
Usable Sensitivity			S/N=30dB	90	18	24			dB μ
				98	18	24			
				106	18	24			
Image Rejection		127.4MHz	R.O.	106	32	26			dB
I.F. Rejection		10.7MHz	S/N=6dB	98MHz	60	50			dB
3db Limiting(1mV)			Rated output	98MHz	15	24			dB μ
Min. output				98MHz	0.5	3			mv
Tuning Ind. Sens.				98MHz	18	24			dB μ
Current consumption				98MHz	320	400			mA
AFC action range				98MHz	500	±200			kHz
Spurious rejection		103.35MHz		98MHz	60	50			dB
S/N Ratio			DIN Audio	98MHz	46	40			dB
Lowest Batt. Volt.		60db		98MHz		5.4			V
Am. suppression				98MHz	36	30			dB
Mod 75kHz/100Hz **Output Power		DC9V/speaker8Ω	10% THD	98MHz		4			W
		Speaker8Ω(AC)			7	6.5			
		Load 32Ω(AC)			10	7			mW
T.H.D. (75KHz dev.)		1mV		98MHz	1	2			%
Over load capacity			10% THD	98MHz		>106			dB μ
Calibration				90M		+-1000			KHz
				98M					
				106M					
Audio Fidelity –3dB (W/Pre-emphasis) (UL75us/CE 50us) 100/1K 10K/1K (75KHz dev.)		VR=RO 1KHz=0db	100H			8			dB
			10K			4			
Supply Voltage: AC120V/230V		R.O : 50mw	Load :8 ohm		Modulation: Dev.22.5kHz @1kHz				
Remark: ()首件產品 ()客戶抽測 ()成品 ()例行抽測 ()業務樣品 ()半成品 ()新機種 ()工程變更					Approved by		Released/Tested by		

MW ELECTRICAL PERFORMANCE

Model: U-1(UL/CE)		Brand: SANGEAN		Temp: 25 °C		R. H. : 75 %		Date: 2003/8/16		
Test Item		Condition			Value		Test No.		Unit	
		Input	Output	Freq.	Nom.	Lim.	1.	2.		
Tuning Range				Min.	515	520			kHz	
				Max.	1730	1710				
Intermediate freq.					455	+ -3			kHz	
Max. Sensitivity			S/N=6dB	600 kHz	48	54			dB μ /m	
				1000 kHz	48	54				
				1400kHz	46	52				
Usable Sensitivity			S/N=20dB	600 kHz	52	58			dB μ /m	
				1000 kHz	50	56				
				1400kHz	50	56				
Image Rejection			S/N=6dB	1000kHz	36	30			dB	
I. F. Rejection (455KHz)			S/N=6dB	600 kHz	60	50			dB	
Selectivity(±10KHz)			S/N=6dB	1400kHz	32	26			dB	
Bandwidth(-6dB)			S/N=6dB	1000kHz	7	+ -3			KHz	
T. H. D. (5mV)			R.O		2	4			%	
Tuning Ind. Sens.						64			dB μ /m	
S/N Ratio (RF 5mV)						32			dB	
Lowest Batt. Volt. (RF 5mV)						5.4			V	
Current Consumption			R.O			320	400			mA
Audio fidelity (-6dB)		1KHz start					100			Hz
								2		
**Output power Mod 80%		100H	10%THD				6.5			W
Over Load Capacity		80%	10%THD			100	>90			dB μ /m
A. G. C. F. O. M.						50			dB	
Calibration				600		+ -50			KHz	
				1000		+ -80				
				1400		+ -60				
Whistle Modulation(5mV/M)						<15			%	
Supply Voltage: AC 120V/230V		R.O : 50mW		Load: 8 Ohm		Modulation: Dev.30% @400Hz				
Remark: ()首件產品 ()客戶抽測 ()成品 ()例行抽測 ()業務樣品 ()半成品 ()新機種 ()工程變更					Approved by		Released/Tested by			

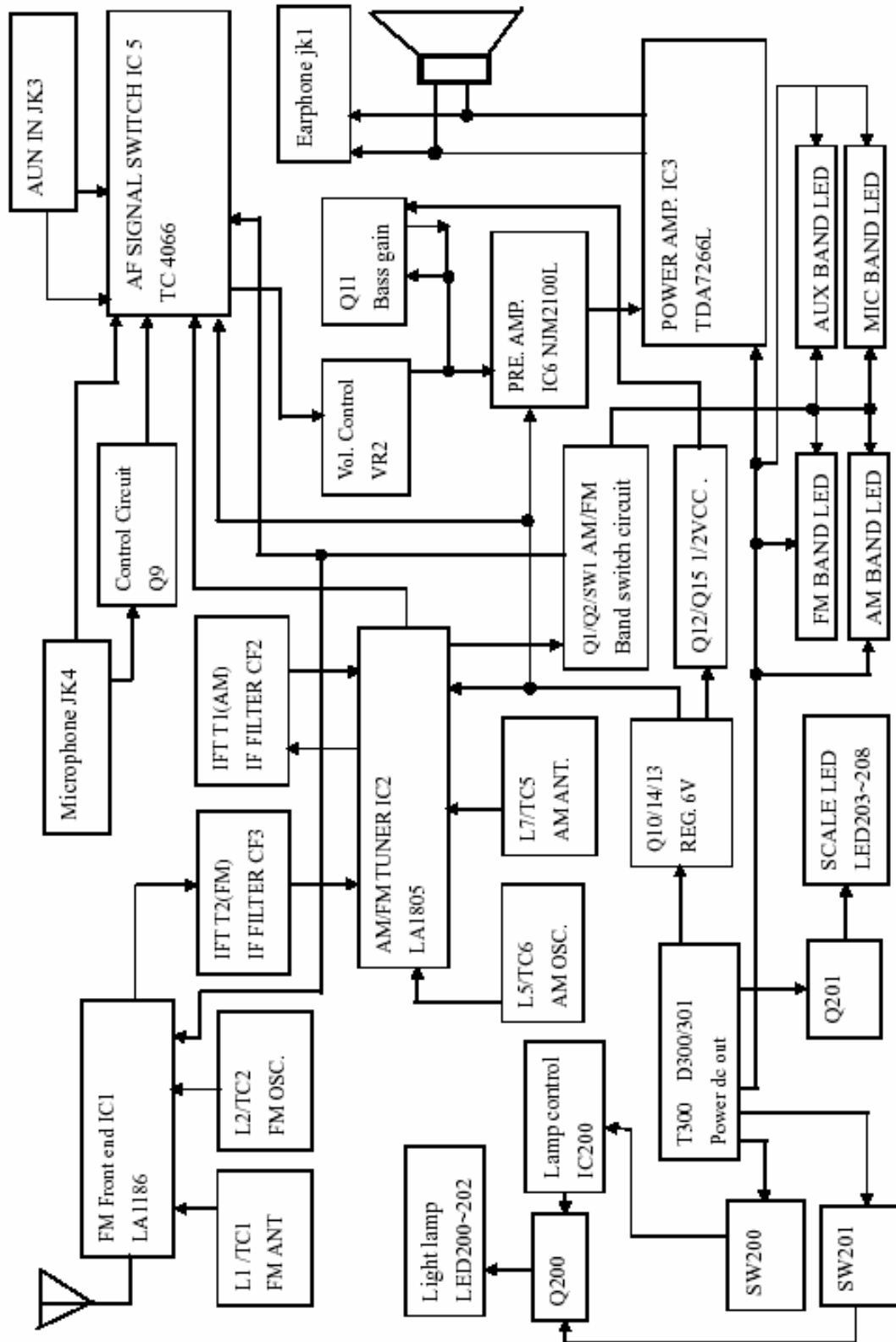
AUX-IN&MICPHONE ELECTRICAL PERFORMANCE

Model: U-1		Brand: ALL		Temp: 25 °C		R. H. : 75 %		Date:2003/10/22	
Test Item		Condition			Value		Test No.		Unit
		Input	Output	Freq.	Nom.	Lim.	1.	2.	
Output Power		AUX IN=0.25V/100Hz THD=10%				6.5			
AUX IN Dynamic Range		Output=R.0 (50mW) AUX IN=100Hz(3%)			1	0.5			V
I/S (Input Sensitivity)		AUX IN=100Hz OUT=7W Volume=MAX			170	±30			mV
DISTORTION		AUX IN =I/S/ 1KHz OUT=R.O(50mW)				0.4			%
MIN OUTPUT		AUX IN =I/S /1KHz Volume=MIN				5			mV
S/N RATIO		AUX IN =I/S /1KHz&GND OUT=R.O (50mW)			55	50			dB
Frequency Response		AUX IN=0.25V/1KHz OUT=50mW=0dB		100HZ		10			dB
				10KHz		4			

MICPHONE ELECTRICAL PERFORMANCE

Test Item	Condition			Value		Test No.		Unit
	Input	Output	Freq.	Nom.	Lim.	1	2	
MICPHONE (Input Sensitivity)	MIC IN=400Hz Volume=MAX=7w				4			mV
Output Power	MIC IN=5mV/400Hz THD=10%				6.5W			W
MICPHONE Input Impedance=10K ohm								
Remark: ()首件產品 ()客戶抽測 ()成品 ()例行抽測 ()業務樣品 ()半成品 ()新機種 ()工程變更				Approved by		Released/Tested by		

BLOCK DIAGRAM



ALIGNMENT INSTRUCTIONS

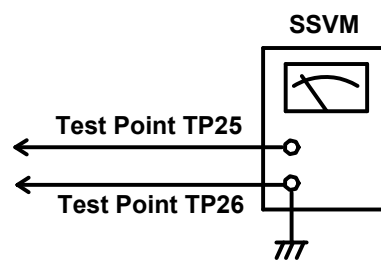
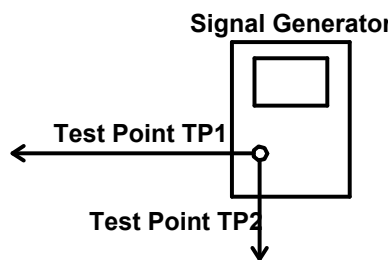
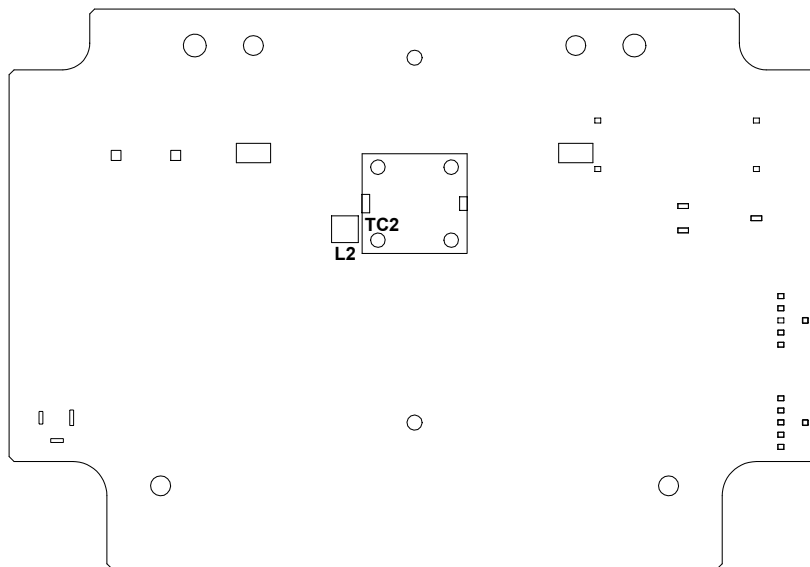
(1) ALIGNMENT FOR FM FREQUENCY RANGE

- a. Required Instruments
 FM RF signal generator
 SSVM

b. Alignment Procedure

Mode	Adjustment	Procedure
FM	L2 TC2	(1) Set the power switch to the ON position. (2) Connect a SSVM to the TP25 and TP26. (3) Connect the FM signal generator to the input terminal of the rod antenna (TP1, TP2) (4) Set the signal of the signal generator to the standard FM band, with frequency deviation to 22.5 kHz modulation. (5) With the tuning gang fully closed, set the signal generator to 87.5 MHz ± 0.5 MHz and adjust L2 for a maximum reading on the SSVM. (6) With the tuning gang fully open, set the signal generator to 108.5 MHz ± 0.5 MHz and adjust TC2 for a maximum reading on the SSVM. (7) Repeat Steps 5 and 6 until the best sensitivity is obtained at both frequencies.

c. Instrument Connection

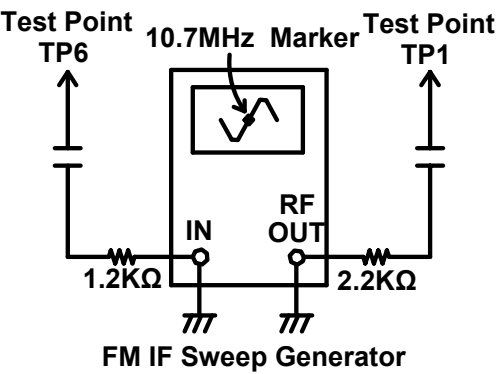
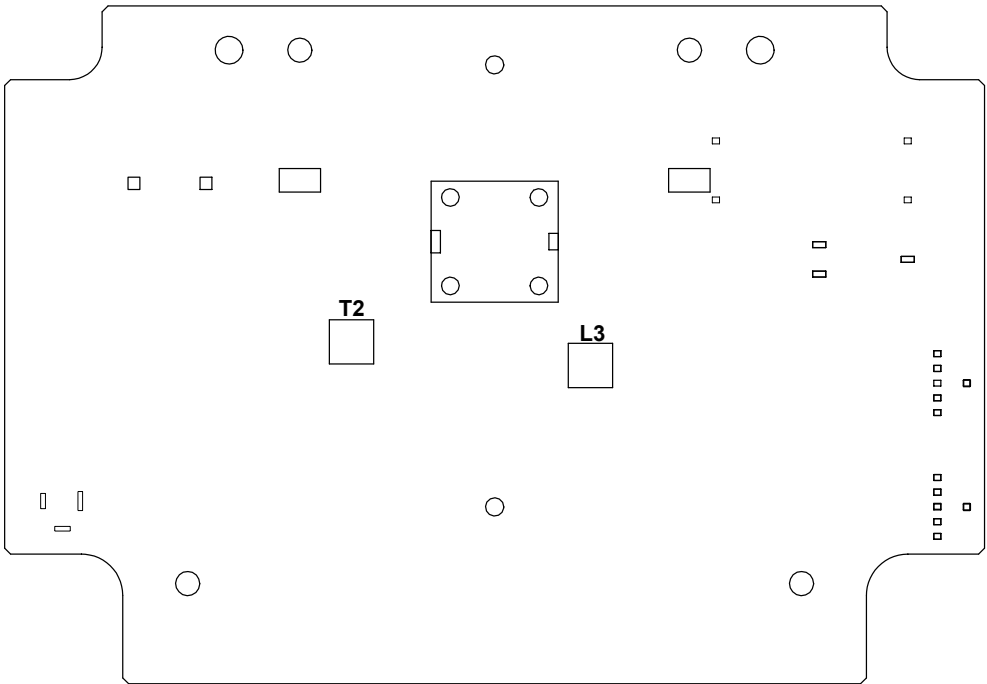


(2) ALIGNMENT FOR FM IF

- a. Required Instruments
FM IF Sweep Generator with Scope
- b. Alignment Procedure

Mode	Adjustment	Procedure
FM	T2 L3	(1) Turn on the radio. (2) Connect the input of the FM IF sweep generation in series with a resister of 1.2k Ohm to the test point TP6 and TP2. (3) Connect the RF output of the FM IF sweep generation in series with a resister of 2.2k ohm to another test point TP1 and TP2. (4) Adjust L3 make curve with respect to the Center marker frequency of 10.7MHz. (5) Adjust T2 have a max.

c. Instrument Connection



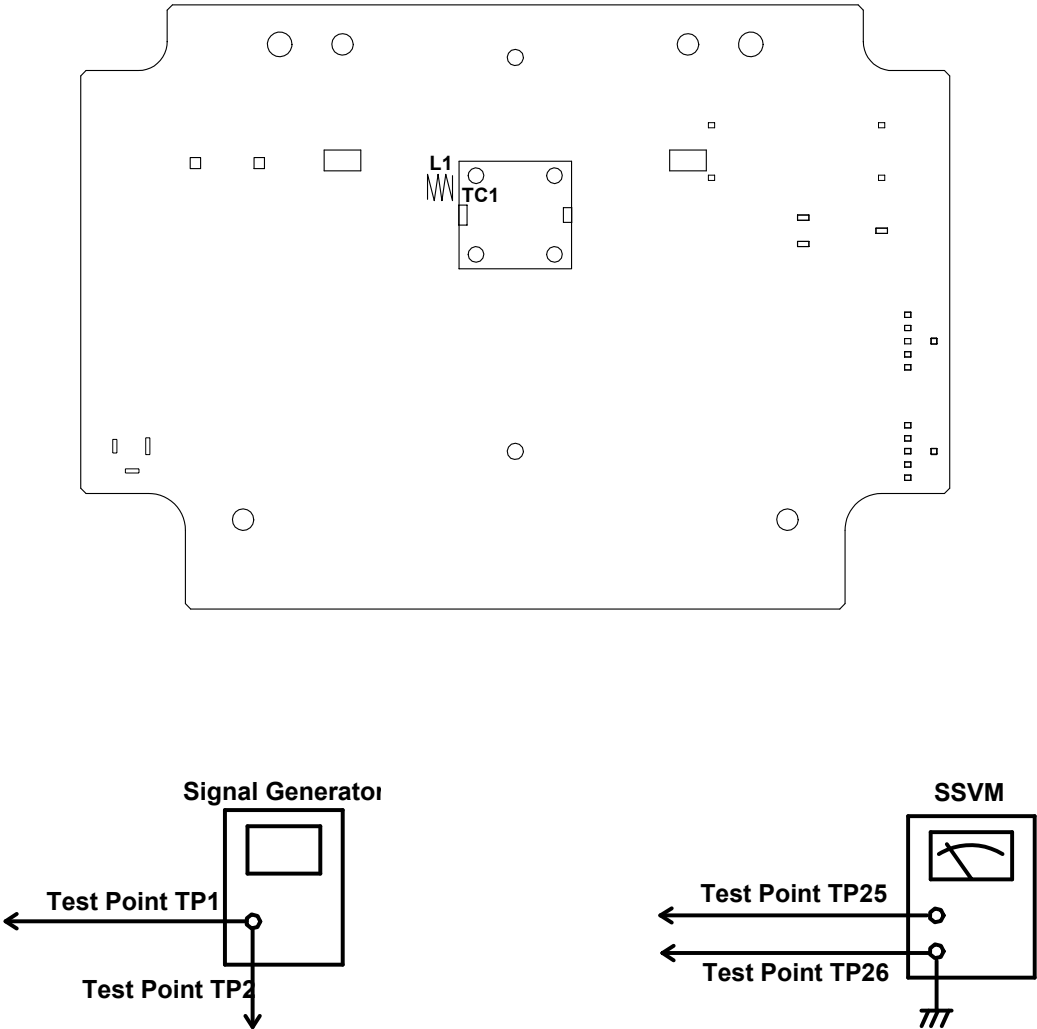
(3) ALIGNMENT FOR FM SENSITIVITY

- a. Required Instruments
FM/AM RF Signal Generator
SSVM

b. Alignment Procedure

Mode	Adjustment	Procedure
FM	L1 TC1	(1) (2) (3) (4) (5) (6) (7) Set the power switch to the ON position. Connect a SSVM to the speaker. (TP25, TP26) Connect the FM signal generator to the input terminal of the rod antenna (TP1, TP2) Set the signal of the signal generator to the standard FM band, with frequency deviation to 22.5kHz modulation. With the tuning gang fully closed, set the signal generator to 90 MHz and Adjust L1, (stretch or squeeze) for a maximum reading on the SSVM. With the tuning gang fully open, set the signal generator to 106 MHz and Adjust TC1 for a maximum reading on the SSVM. Repeat steps 5 and 6 until the best sensitivity is obtained at both frequencies.

c. Instrument Connection



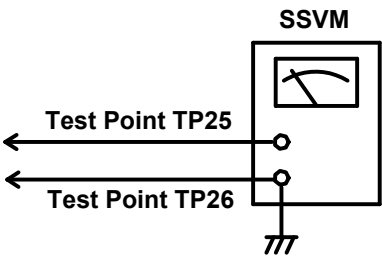
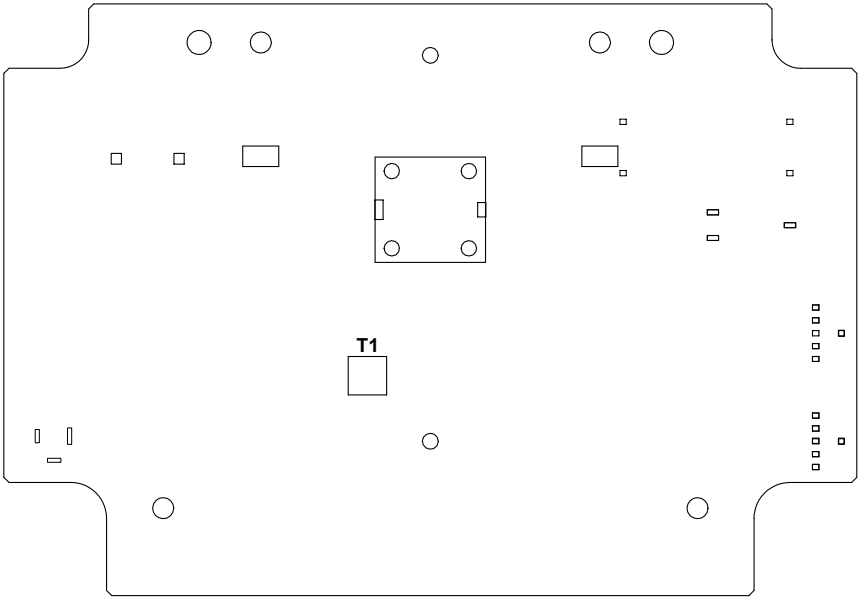
(4) ALIGNMENT FOR AM IF

- a. Required Instruments
AM RF Signal Generator
SSVM

b. Alignment Procedure

Mode	Adjustment	Procedure
AM	T1	(1) (2) (3) (4) Set the BAND switch to the AM position. Connect a SSVM to the TP25, TP26. Connect the AM signal generator to the loop antenna. Set the signal generator to 455 kHz, with 30% modulation. Set the tuning gang fully closed, and adjust T1 for a maximum reading on the SSVM.

c. Instrument Connection



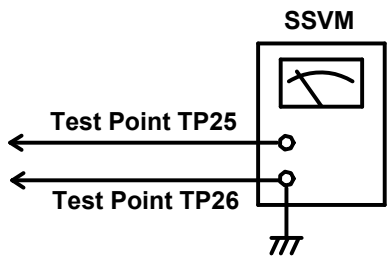
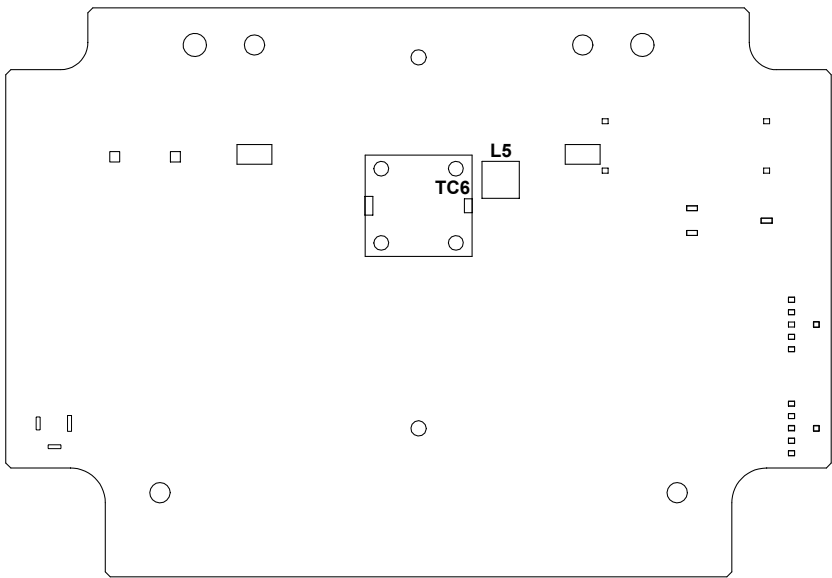
(5) ALIGNMENT FOR AM FREQUENCY RANGE

- a. Required Instruments
 - AM RF Signal Generator
 - SSVM

b. Alignment Procedure

Mode	Adjustment	Procedure
AM	L5 TC6	(1) Set the BAND switch to the AM position. (2) Connect a SSVM to the TP25, TP26. (3) Connect a AM RF signal generator to the loop antenna. (4) Set the signal generator to 515 kHz with 30% modulation. Set the tuning gang fully closed, and adjust L5 for maximum reading on the SSVM. (5) Set the signal generator to 1750 kHz. Set the tuning gang fully open and adjust TC6 for a maximum reading on the SSVM. (6) Repeat Steps 4 and 5 until the best sensitivity is obtained at both frequencies.

c. Instrument Connection



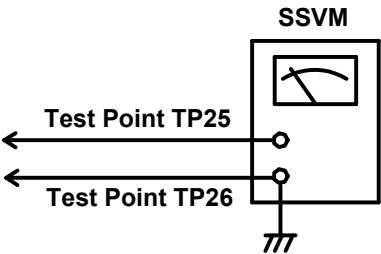
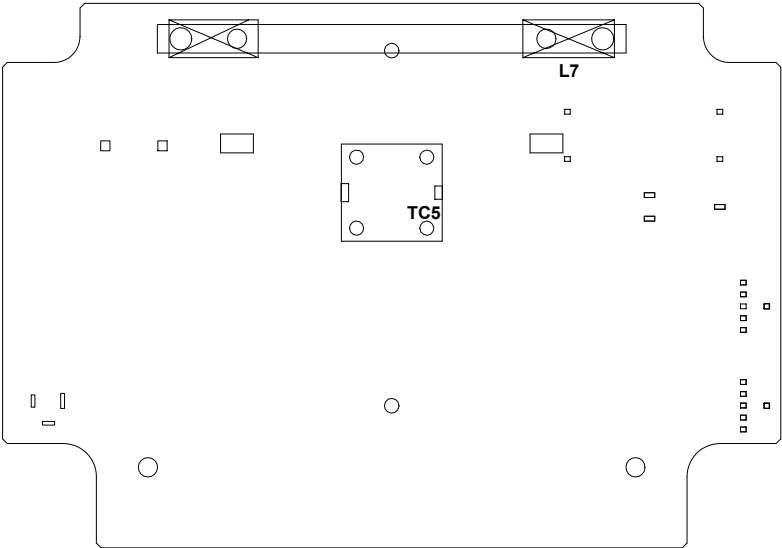
(6) ALIGNMENT FOR AM SENSITIVITY

- a. Required Instruments
 - AM RF Signal Generator
 - SSVM

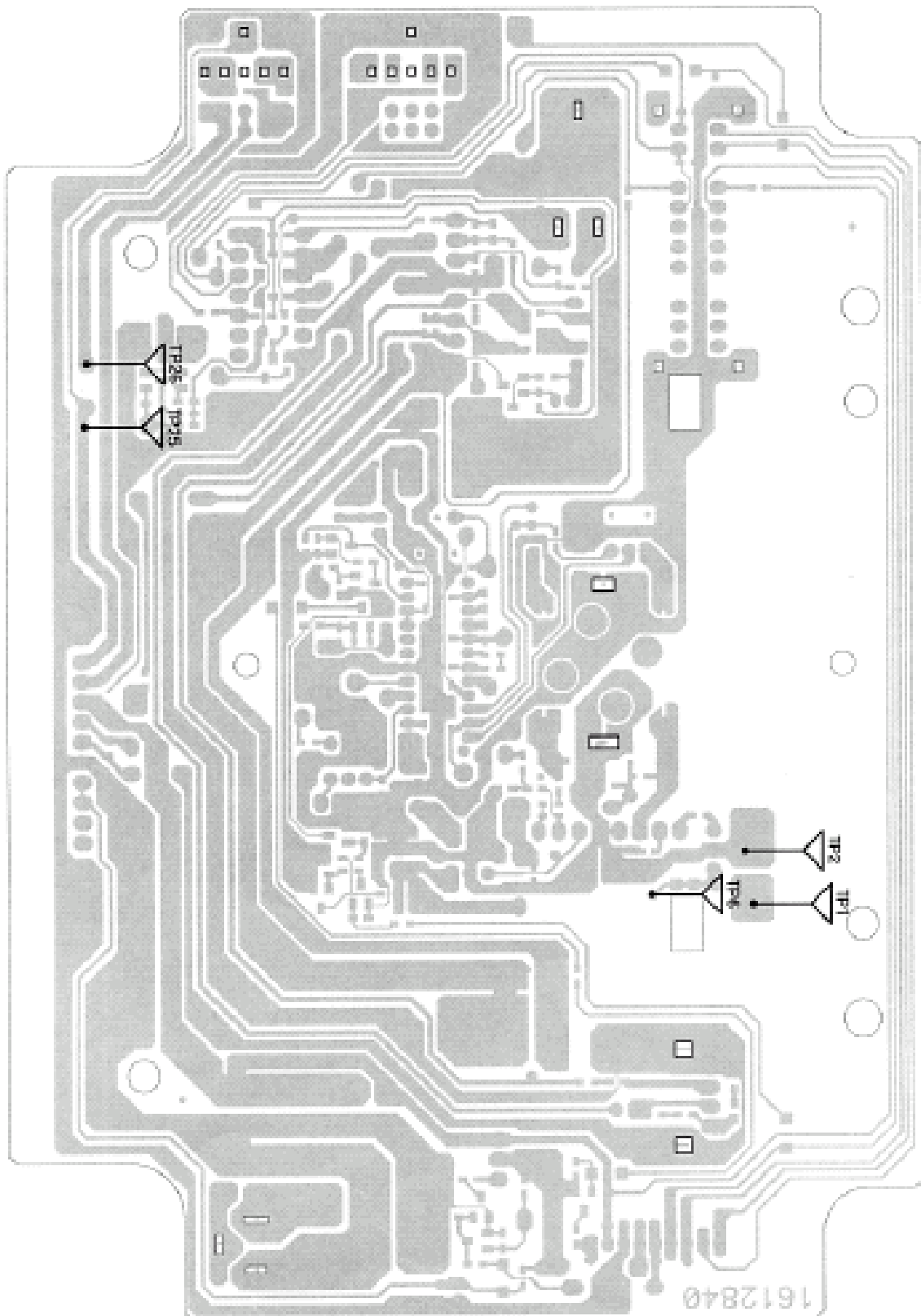
b. Alignment Procedure

Mode	Adjustment	Procedure
AM	L7 TC5	(1) Set the BAND switch to AM position. (2) Connect a SSVM to the TP25, TP26. (3) Connect the AM RF signal generator to the loop antenna. (4) Set the signal generator to 600 kHz, with 30% modulation. Set the tuning gang fully closed and adjust L7 for a maximum reading on the SSVM. (5) Set the signal generator to 1400 kHz. Set the tuning gang fully open and adjust TC5 for a maximum reading on the SSVM. (6) Repeat steps 4 and 5 until the best sensitivity is obtained at both frequencies.

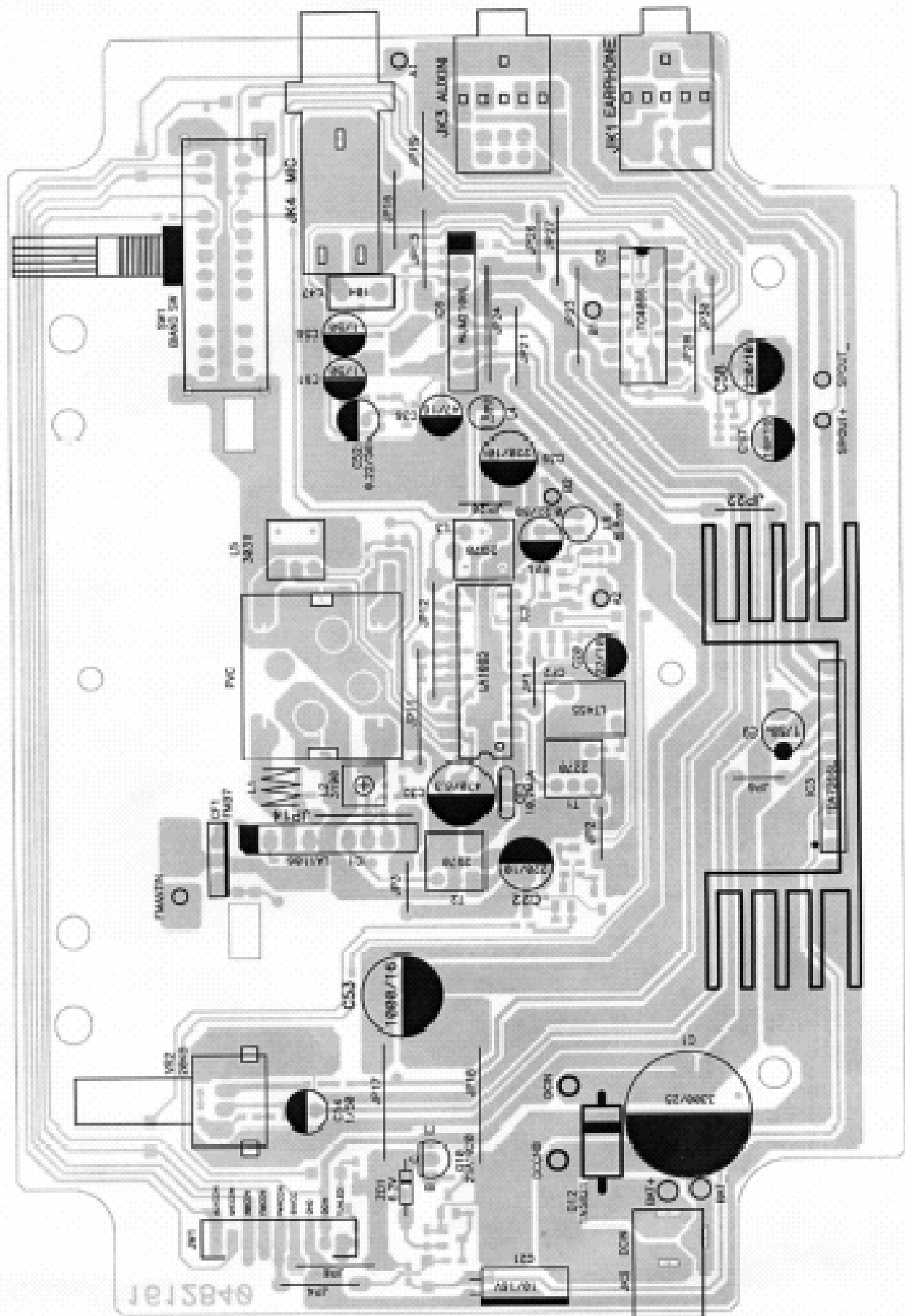
c. Instrument Connection



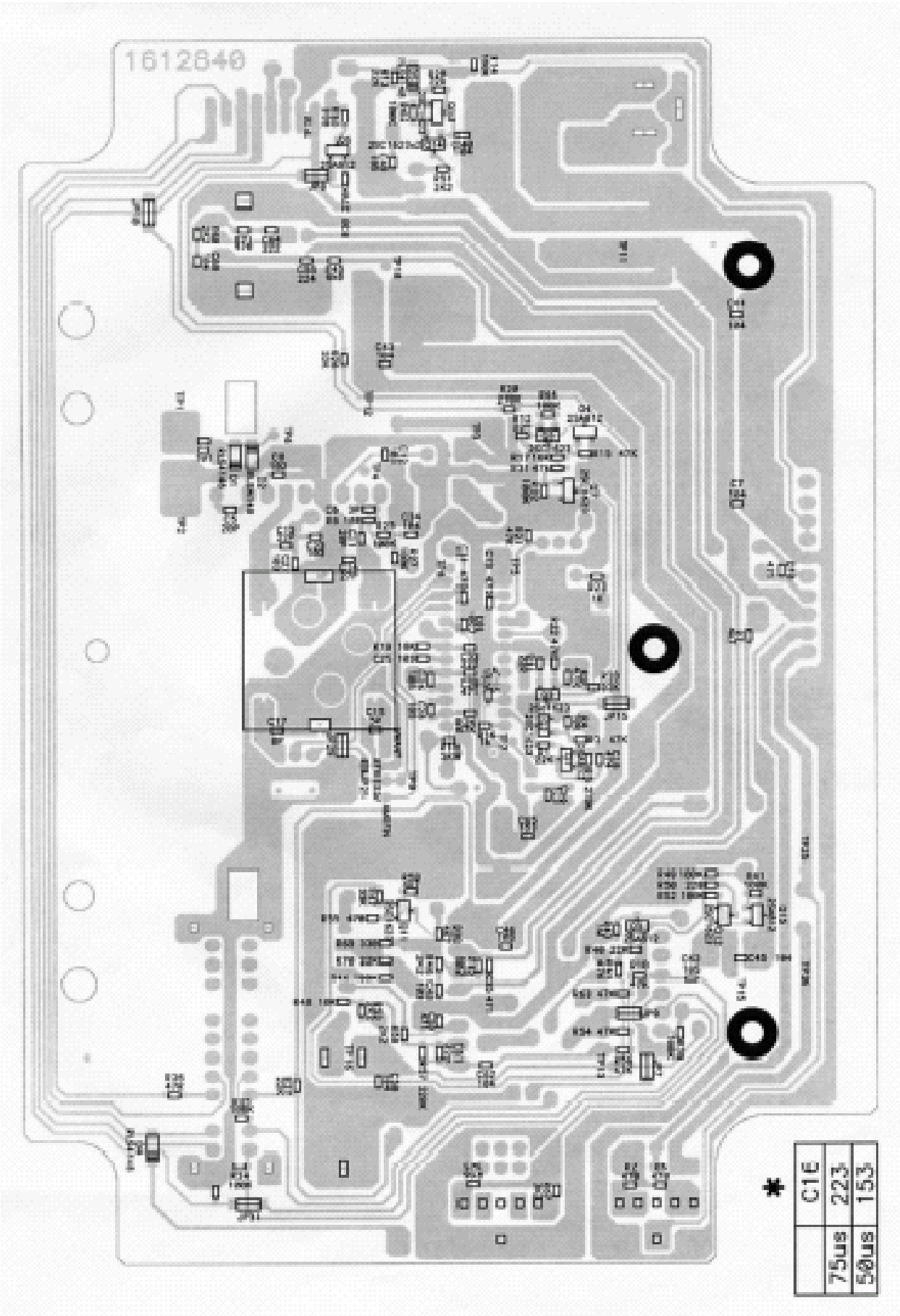
TEST POINTS DIAGRAM



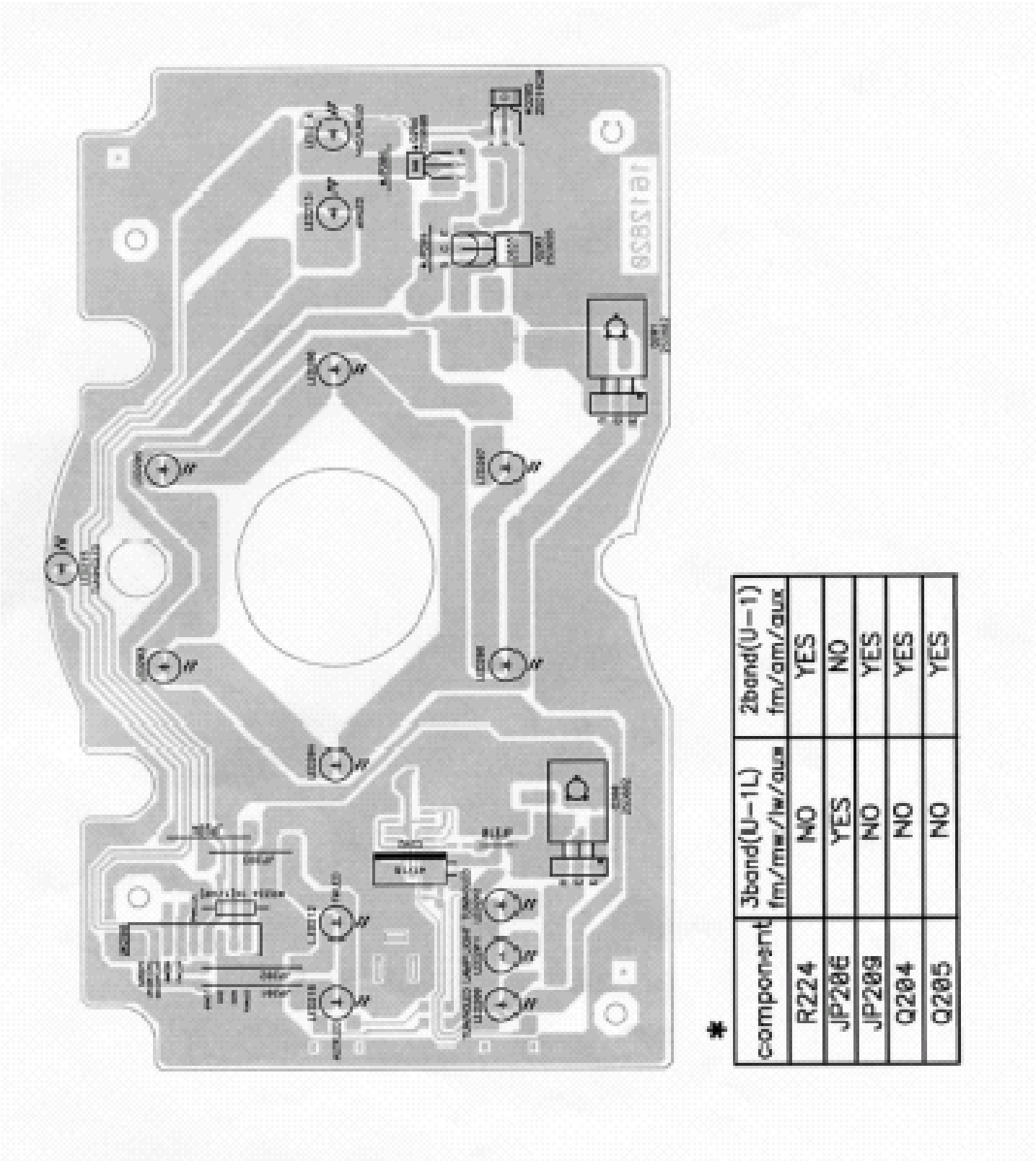
MAIN PCB TOP VIEW



MAIN PCB BOTTOM VIEW



CONIROL PCB TOP VIEW

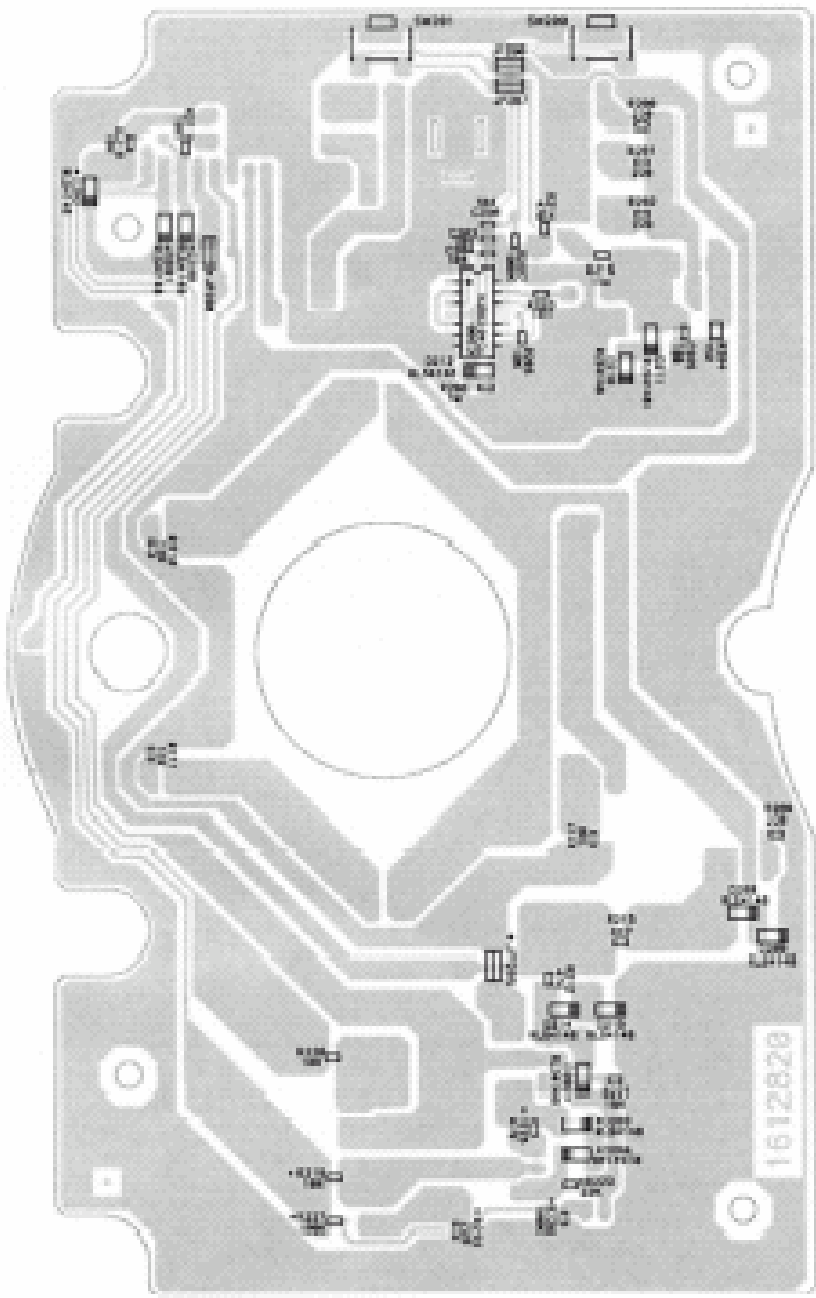


*

component	3band(U-1L) fm/mw /hw/aux	2band(U-1) fm/am/aux
R224	NO	YES
JP206	YES	NO
JP209	NO	YES
Q204	NO	YES
Q205	NO	YES

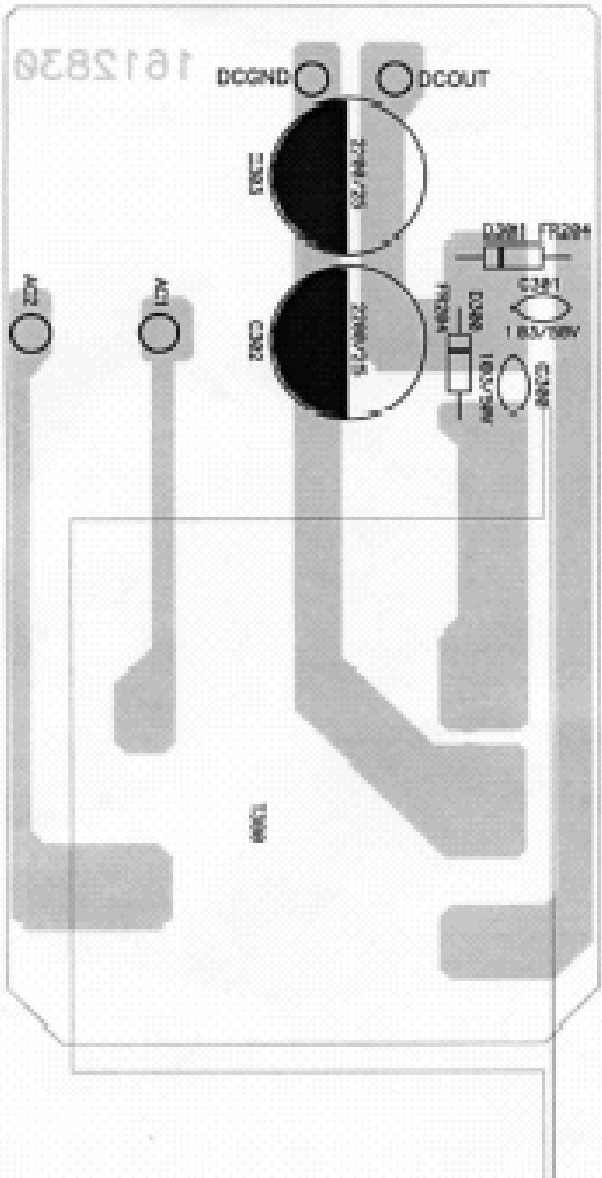
CONTIROL PCB BOTTOM VIEW

★		
component	3band(U-1L) fm/mm/lw/aux	2band(U-1) fm/cm/aux
R219	YES	NO
R222	NO	YES
R223	NO	YES
R225	NO	YES
R226	NO	YES
R227	NO	YES
JP208	YES	NO
JP205	NO	YES
ID200-205	NO	YES

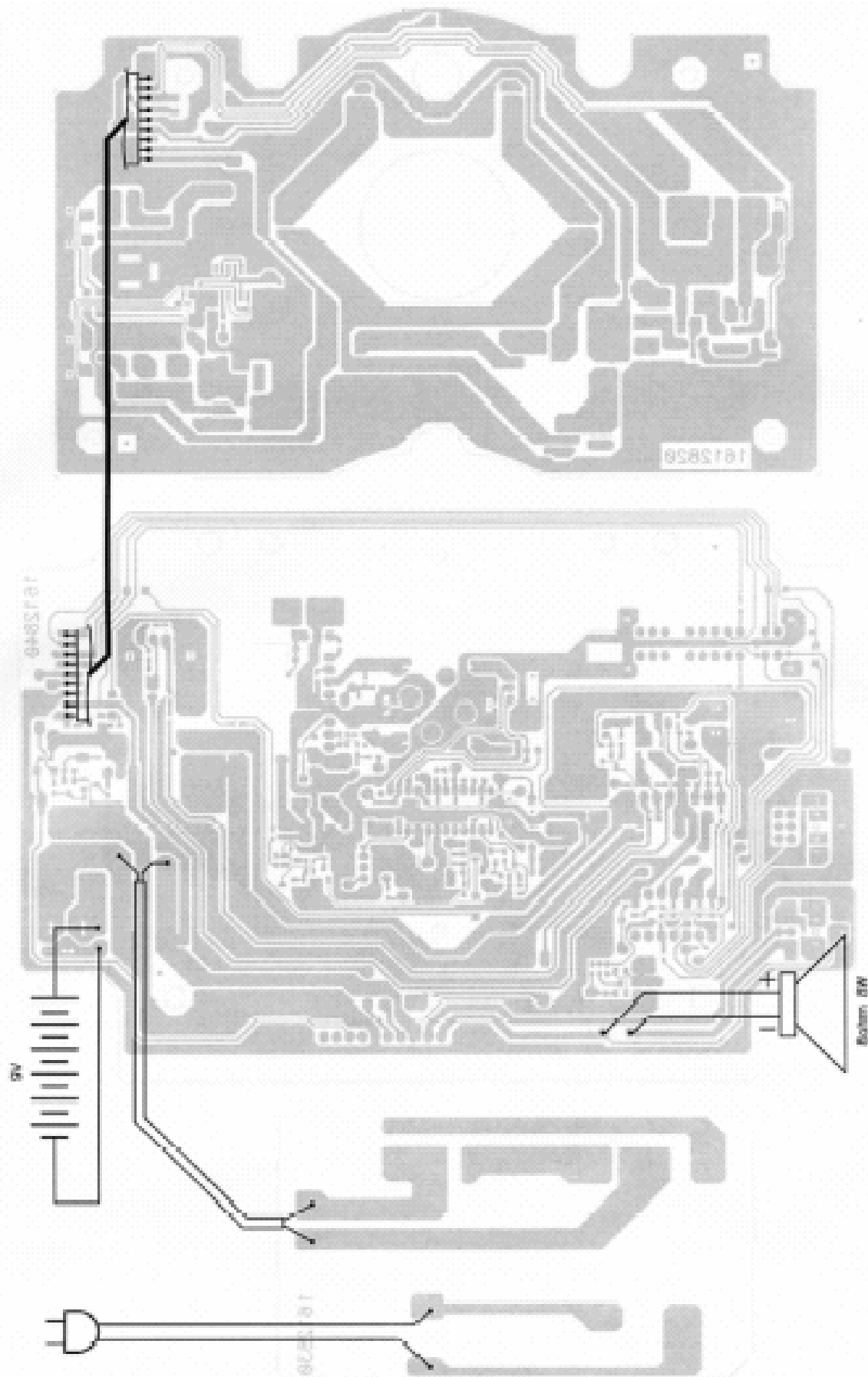


POWER PCB TOP VIEW

component	3band(ROBERTS) fm/mw/w/aux	2band(230V/CE) fm/am/aux	2band(120V/UL) fm/am/aux	2band(110V/TWN) fm/am/aux
T300	1720350	1720350	1720360	1720360
AC CORD	1710310 UK	1710290	1710300	1710320

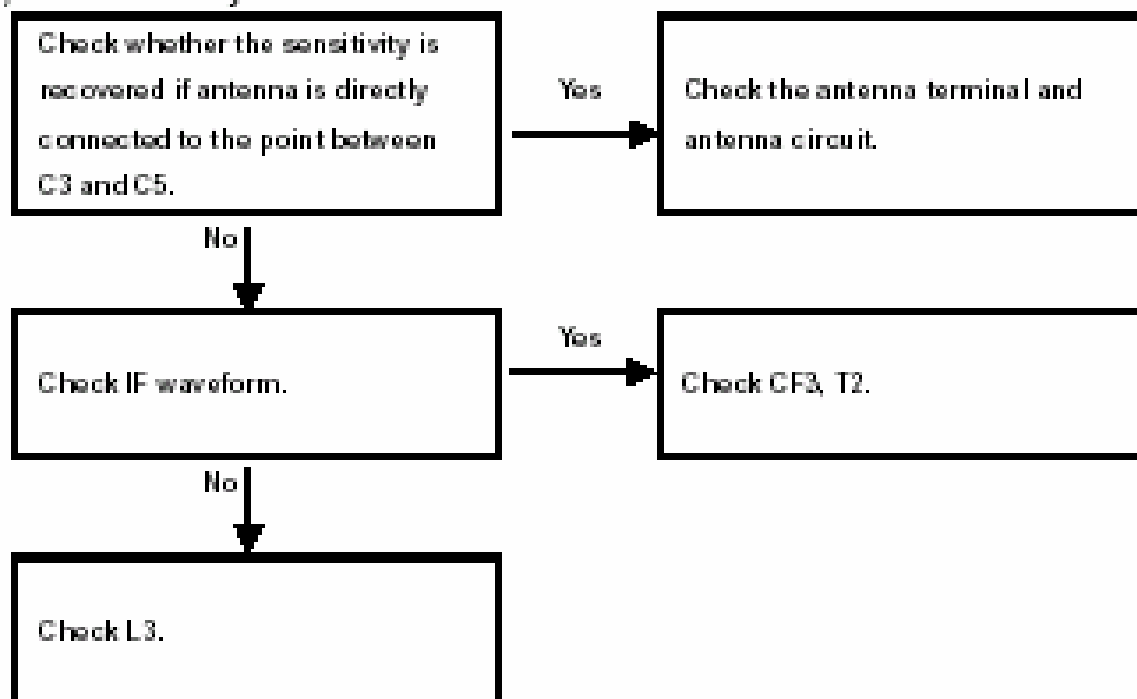


WIRING DIAGRAM

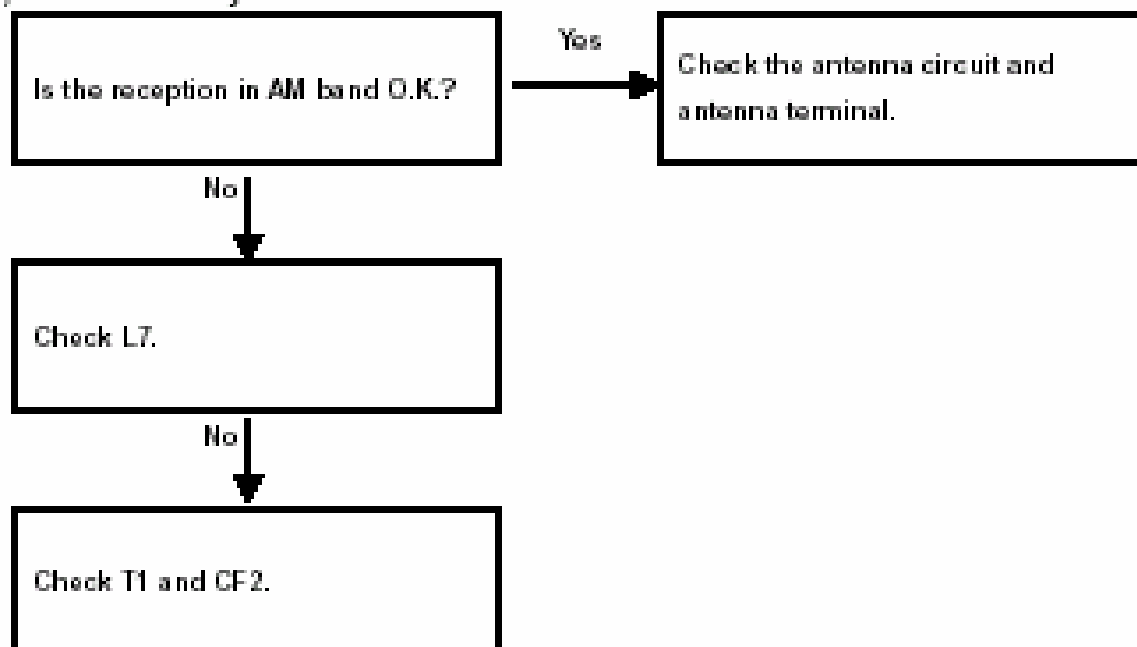


TROUBLESHOOTING FLOW CHART

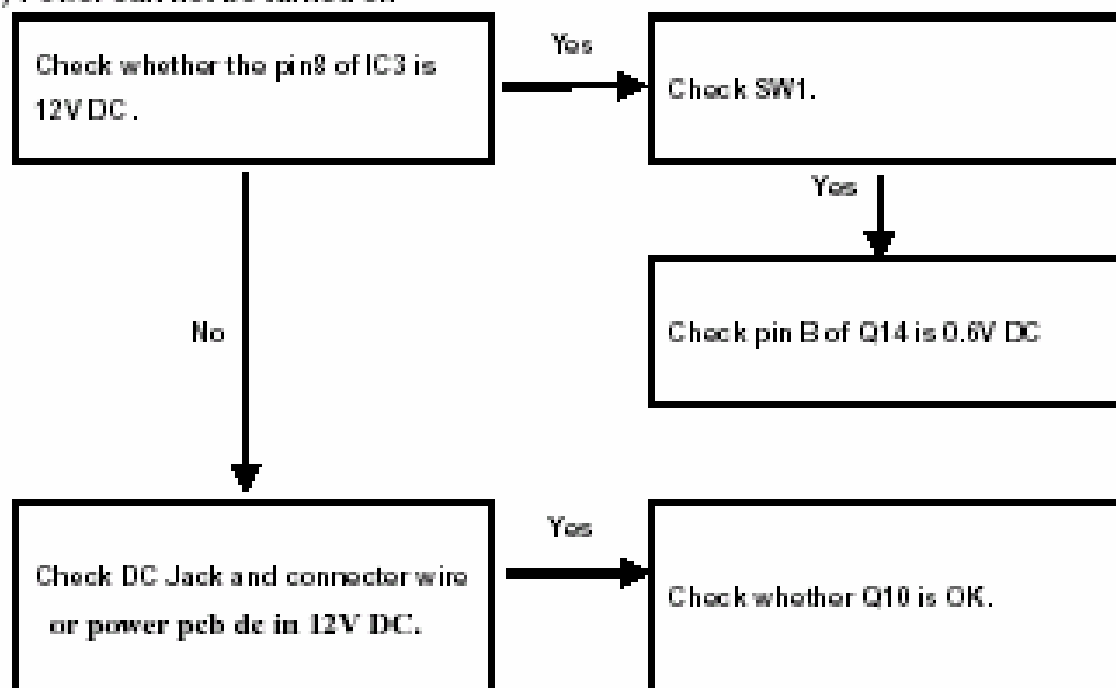
(1) Weak sensitivity on FM mode



(2) Weak sensitivity in AM band



(3) Power can not be turned on



ELECTRICAL PART LIST

U1

Part NO	Description	Q'ty	Remark
1012050	IC LA1186N	1	IC 1,
1012071	IC NJM2100L	1	IC 6,
1012320	IC 4066BP	1	IC 5,
1013540	IC TDA7266L	1	IC 3,
1013600	IC LA1805 DIP24S	1	IC 2,
1013620	CH IC TC 4013BFN	1	IC 200,
1020041	TR 2SB808G	1	Q 204,
1020230	CH TR 2SA812 M6	5	Q 1,4,6,9,15,
1020241	CH TR 2SC1623(L7)	8	Q 2,3,5,7,11-14,
1020250	TR 2SA1020Y	1	Q 10,
1023000	TR 2SD1012G	1	Q 205,
1023020	TR 2SD882Q	2	Q 200,201,
1023040	TR 2SD655E MUTE G400	1	Q 203,
1041211T	DIODE 1N5821-T	1	D 12,
1041240T	DIODE FR204-T	2	D 300,301,
1045120T	ZENER RD6.2EB-T	1	ZER1,
1046011	CH DIODE MM4148	17	D 1,2,4,5,200-205,208-212,214,215,
1050290	LED RED RT3-234SRT2S-B	1	LED215,
1057070	LED YEL 4.5 ϕ 4407YL28	6	LED203-208,
1062120	LED AMBER 5 ϕ 4847AY27T	4	LED212-214,216,
1062130	LED WHT 5 ϕ U9387J5T	3	LED200-202,
1111240	BAR ANT & COIL 1240	1	L 7,
1122271	ADJ.COIL 2271	1	T 1,
1122970	ADJ. COIL 2970	2	T 2,L3,
1123031	ADJ. COIL 3031	1	L 5,
1123190	ADJ. COIL 3190	1	L 2,
1135100	FIXED COIL 1.5mH	1	L 4,
1135902	FIXED COIL 6.8mHJ	1	L 6,
1144170	SP COIL 4.5x3.5Tx0.7I	1	L 1,
1200560	PVC WF-420LT13-A24701S	1	PVC
1315524	R-VR 20KB	1	VR 2,
1612820	PCB-C U1	1	
1612830	PCB-P U1	1	
1612840	PCB-A U1	1	
1620740	SPK 6.5" 8 Ω 15W	1	SPK1,
1631380	CH TACT SW 1P1C	2	SW 200,201,
1631531	ROTARY SLIDE SW.4C4P	1	SW 1,
1640040	JACK HP(E)	2	JK 1,3,
1640110	JACK HP DTJ-0613B	1	JK 4,
1647100	JACK DC-470AG PBT 2.0L	1	JK 2,
1664081	SFELA10M7JAA0-B0	1	CF 3,
1664170	FILTER LT455HW	1	CF 2,
1664222	FILTER GFMB7	1	CF 1,
1704660	FM ANT W/ASS'Y 320mm 1p	1	ANT WIRE
1710290	AC CORD 230V 2.5M CE	1	PLUG1
1720350	TRANS 230V DC:10V/1.2A	1	T 300,
1850709	HEAT SHRINK 3.5 ϕ x45mm	2	
1851409	HEAT SHRINK TUBE7 ϕ x45mm	1	
4110364CS	CC 103Z 50V F-S	2	C 300,301,
4422460S	EL 224M 50V 5x11-S	2	C 24,52,
4410561S	EL 105M 50V 5x11-S	3	C 51,54,56,
441056PT0	EL 105M 50V 5x11□□□	1	C 9,
4410632S	EL 106M 16V 5x11(2)-S	2	C 21,57,
442263PS	EL 226M 16V 5x11-S	1	C 20,
4447631S	EL 476M 16V 5x11-S	2	C 36,202,

Part NO	Description	Q'ty	Remark
442272KS	EL 227M 10V 6.3x11-S	3	C 22,39,58,
444771KS	EL 477M 6.3V 6.3x11-S	1	C 32,
4410831S	EL 108M 16V 10x20(S)-S	1	C 53,
443384KS	EL 338M 25V 16x25 S	1	C 1,
4610460T	MY 104J 50V	1	C 47,
4900023S	EL 228M 25V 13x25 105□S	2	C 302,303,
5003001	CH CC 030C 50V NPO-C	1	C 6,
5005001	CH CC 050C 50V NPO-C	1	C 15,
5008097	CH CC 080C 50V N750-C	1	C 17,
5010101	CH CC 101J 50V NPO-C	1	C 3,
5010261	CH CC 102K 50V X7R-C	1	C 8,
5010361	CH CC 103K 50V X7R-C	7	C 12,23,25,27,30,46,48
5010471	CH CC 104Z 25V Y5V-C	13	C 7,34,40,43-45,50,60, 62,200,203-205,
5010557	CH CC 105Z 10V F-C	4	C 26,28,49,63,
5012351	CH CC 123K 16V X7R-C	1	C 66,
5015361	CH CC 153K 50V X7R-C	2	C 16,65,
5020001	CH CC 200J 50V NPO-C	2	C 5,11,
5022001	CH CC 220J 50V NPO-C	2	C 13,61,
5022261	CH CC 222K 50V X7R-C	2	C 33,64,
5022472	CH CC 224Z 16V Y5V-C	1	C 55,
5027001	CH CC 270J 50V NPO-C	1	C 14,
5047101	CH CC 471J 50V NPO-C	4	C 10,29,35,59,
5047365	CH CC 473Z 50V Y5V-C	2	C 19,31,
5047472	CH CC 474Z 16V Y5V-C	1	C 18,
6020436	RD 1/4W 1KJSM10	1	R 224,
6100112	CH RD 1/16W 10J-C	6	R 210,211,213,217,218, 220,
6100115	CH RD 1/16W 18J-C	2	R 8,221,
6100116	CH RD 1/16W 22J-C	3	R 11,12,209,
6100120	CH RD 1/16W 47J-C	2	R 36,225,
6100128	CH RD 1/16W 220J-C	5	R 50,200-202,222,
6100130	CH RD 1/16W 330J-C	2	R 65,69,
6100132	CH RD 1/16W 470J-C	5	R 2,6,55,71,214,
6100136	CH RD 1/16W 1KJ-C	2	R 16,23,
6100140	CH RD 1/16W 2.2KJ-C	5	R 46,51,53,58,60,
6100142	CH RD 1/16W 3.3KJ-C	2	R 66,67,
6100143	CH RD 1/16W 3.9KJ-C	1	R 18,
6100144	CH RD 1/16W 4.7KJ-C	5	R 7,29,59,203,215,
6100146	CH RD 1/16W 6.8KJ-C	1	R 45,
6100147	CH RD 1/16W 8.2KJ-C	1	R 42,
6100148	CH RD 1/16W 10KJ-C	4	R 4,17,48,205,
6100150	CH RD 1/16W 15KJ-C	1	R 216,
6100151	CH RD 1/16W 18KJ-C	1	R 19,
6100152	CH RD 1/16W 22KJ-C	7	R 1,13,28,37,40,70,223
6100154	CH RD 1/16W 33KJ-C	3	R 26,33,47,
6100156	CH RD 1/16W 47KJ-C	13	R 3,9,10,15,21,22,24, 31,41,54,56,63,212,
6100160	CH RD 1/16W 100KJ-C	16	R 14,25,27,32,34,35,39, 44,49,52,61,62,64, 207,226,227,
6100164	CH RD 1/16W 220KJ-C	1	R 57,
6100165	CH RD 1/16W 270KJ-C	3	R 5,20,30,
6100172	CH RD 1/16W 1MJ-C	2	R 43,206,
6100194	CH RD 1/16W OJ-C	1	JP 25,
6110194	CH JUMP OJ-B	10	JP 7-9,10,15,29,31,200, 205,207,

U1

Part NO	Description	Q'ty	Remark
6160114	CH RD 1/10W 15J-A	1	R 204,
8000010	W/JUMP 5(10)0.6mm	1	JP 210,
8000020	W/JUMP 6.5(10).6mm	5	JP 1-3,6,20,
8000030	W/JUMP 7.5(10)0.6mm	3	JP 22,26,209,
8000040	W/JUMP 10(10)0.6mm	8	JP 4,5,13,16,19,21,27, 30,
8000050	W/JUMP 12.5(10).6mm	5	JP 14,23,28,203,204,
8000090	W/JUMP 15(10)0.6mm	7	JP 11,12,17,18,24,201, 202,
8151249	W/PVC 80(6+6)T WHT	1	JWB,
8151542	W/PVC 95(6+6)RED	1	JWA,
8592560	W/2 130(6+6) R/B	1	SP WIRE,
8592700	W/PVC/2 360(6+6) BLK/RED	1	DC IN WIRE
8592710	W/PVC/2 400(6+6) WHT/RED	1	BAT.WIRE
86920E8	W/9 120(5+5)P=2 GRY	1	JW 1,

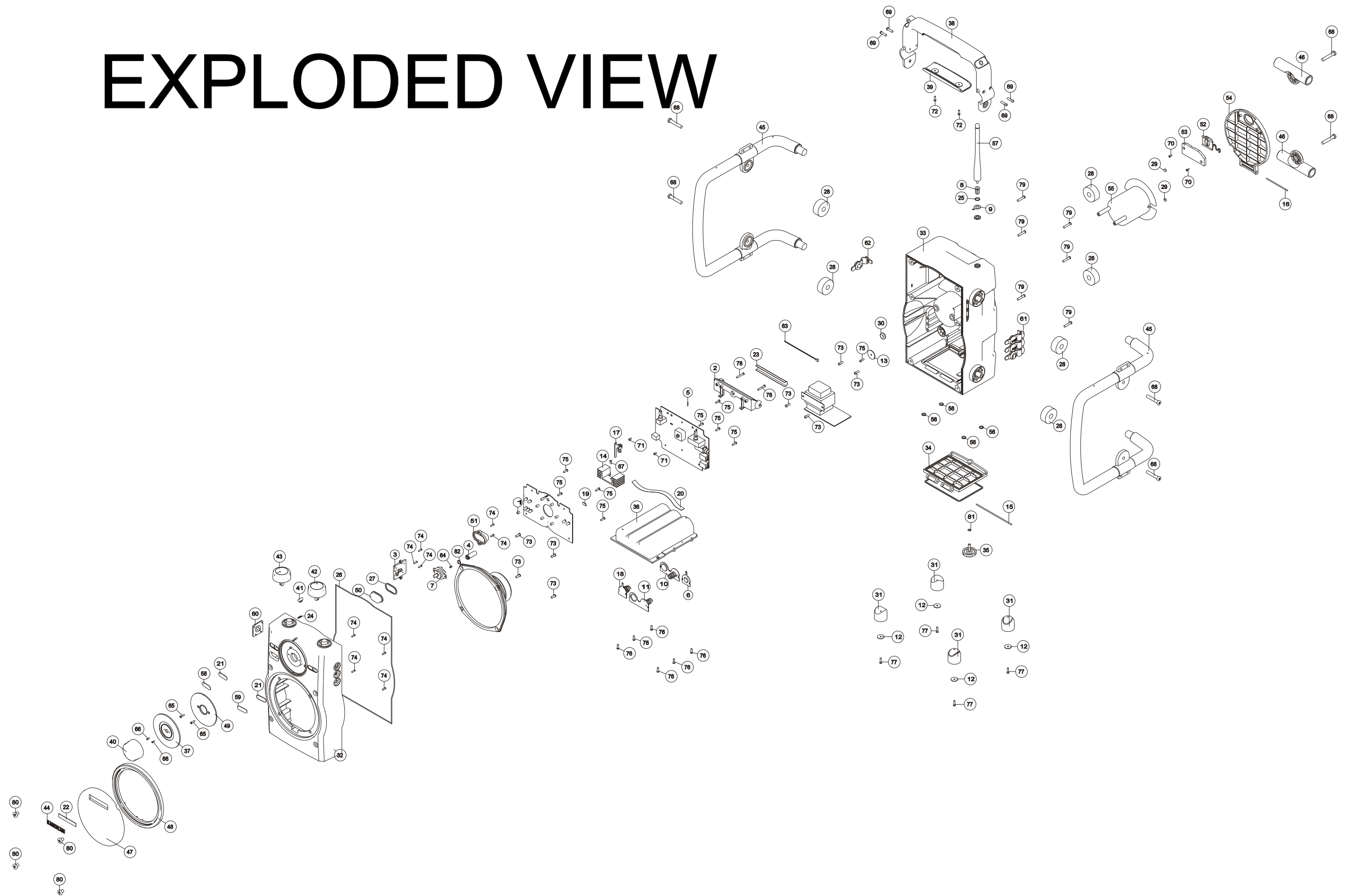
MECHANICAL PART LIST

U1

Ref.NO	PART NO.	DESCRIPTION	Q'TY	DWG NO	REMARK
1	20E9010	LED HODER	1		
2	20K9000	BAR ANT HOLDER	1	A3-TONE-20A	
3	20K9010	LIGHT KNOB HOLDER	1	A3-TONE-22A	
4	20K9020	TUNING SHAFT	1	A4-TONE-21A	
5	2149120	ANT TERMINAL PIN	1		
6	2165140	BATTERY CONTACT (+)	1	A4-818-1495	
7	21J9020	TUNING VR ASS'Y	1	A2-ATR1-27	
8	21J9030	ROD ANT HOLDER	1	A4-ATR1-29	
9	21J9040	ROD ANT TERMINAL	1	A4-ATR1-35	
10	21K9000	BATTERY CONTACT (+)(-)	1	A3-TONE-35A	
11	21K9010	BATTERY CONTACT(-)(+)	1	A3-TONE-36A	
12	21K9020	WASHER ϕ 3.1x ϕ 15x1t	4	A4-TONE-41A	
13	21K9030	WASHER ϕ 3.1x ϕ 22x1t	1	A4-TONE-42A	
14	21K9060	HEAT SINK	1	A4-TONE-44A	
15	21K9070	BATTERY COVER FIXER BAR	1	A4-TONE-43A	
16	21K9080	COVER FIXER BAR	1	A4-TONE-45A	
17	21K9090	TOUCH PLATE	1	A4-TONE-49A	
18	21K9120	BATTERY CONTACT ASS'Y	1	A4-TONE-51A	
19	2256000	P.C.B. HEMELON	1		
20	22K9000	RIBBON	1	A4-TONE-56A	
21	23K9000	DOUBLE TAPE	2	A4-TONE-52A	
22	23K9010	DOUBLE TAPE	1	A4-TONE-53A	
23	23K9020	NEP SPACER	1	A4-TONE-54A	
24	23K9030	EVA SPACER	1	A4-TONE-55A	
25	24J9050	ROD ANT PACKING	1	A4-ATR1-25	
26	24K9000	PACKING-FRONT CABI	1	A2-TONE-38A	
27	24K9020	PACKING-LAMP LENS	1	A4-TONE-40A	
28	24K9030	RUBBER CUSHION	6	A4-TONE-30A	
29	24K9040	CUSHION ϕ 4.8x2.5t	2	A4-TONE-31A	
30	24K9050	WIRE BUSHING	1	A4-TONE-32A	
31	24K9060	RUBBER FOOT	4	A4-TONE-37A	
32	301K901A	FRONT CABINET	1	A1-TONE-01A	
33	303K902	BACK COVER	1	A1-TONE-02A	
34	304K901	BATTERY COVER	1	A1-TONE-04A	
35	304K901-2	BATT. COVER FIXER SCREW	1	A3-TONE-26A	
36	304K901-A	BATTERY CASE	1	A1-TONE-05A	
37	305K902	DIAL LENS	1	A3-TONE-12A	
38	309K901	HANDLE	1	A1-TONE-16A	
39	309K901-1	HANDLE RUBBER	1	A3-TONE-19A	
40	312K901	TUNING KNOB	1	A3-TONE-10A	
41	312K901-1	TUNING LED LENS	1	A4-TONE-23A	
42	313K901-1	BAND KNOB	1	A3-TONE-14A	
43	316K901	VOLUME KNOB	1	A3-TONE-15A	
44	324K901	BADGE	1	A4-TONE-25A	
45	338K901	BUMPER	2	A1-TONE-17A	
46	338K901-1	BUMPER CONNECTOR	2	A2-TONE-18A	
47	343K901	SPEAKER GRILL	1	A2-TONE-26A	
48	343K901-1	SPEAKER RING	1	A2-TONE-09A	
49	345K901	DIAL PLATE	1	A3-TONE-11A	
50	346K901	LAMP LENS	1	A3-TONE-13A	
51	346K901-1	LAMP COVER	1	A3-TONE-24A	
52	347K901-1	DOOR LOCK KNOB	1	A3-TONE-07A	
53	347K901-2	DOOR LOCK KNOB HOLDER	1	A3-TONE-08A	
54	347K902A	WIRE DOOR	1	A1-TONE-03A	
56	349K901	PVC PLATE	4	A4-TONE-46A	
58	370K901	FM BAND PLATE	1	A4-TONE-33A	
59	371K902	MW BAND PLATE	1	A4-TONE-34A	

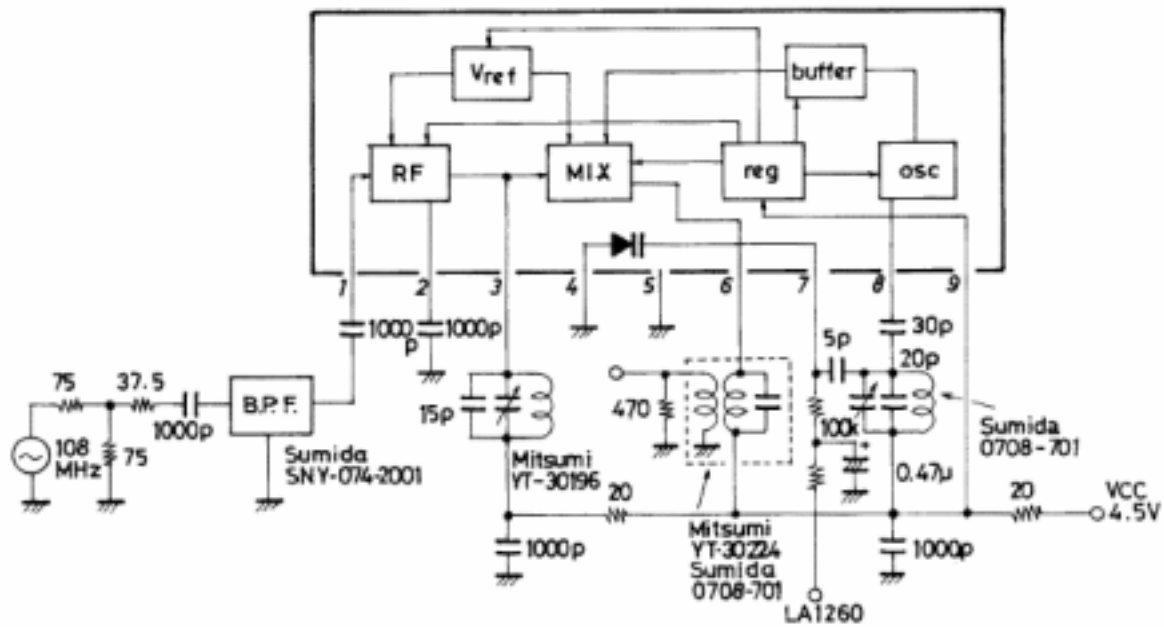
Ref.NO	PART NO.	DESCRIPTION	Q'TY	DWG NO	REMARK
60	372K901	LIGHT KNOB	1	A4-TONE-27A	
61	373K901	MIC/AUX/PHONE CAP	1	A4-TONE-28A	
62	374K901	DC JACK CAP	1	A4-TONE-29A	
63	8510000	W/TIES 100mm	3		
64	9002042	SCREW JMP 2.6x4 NI	1		
65	9013102	SCREW JMF M3x10(NI)	2		F CABI/TUNINGx2
66	9051062	SCREW JMPW M2x6(NI)	2		TUNING LENS/TUNINGx2
67	9063062	SCREW JMB 3.0x6(NI)	1		IC/HEAT SHINK
68	9090016	SCREW PTB M6x35(CR)	6		BUMPER/BACKCOVER
69	9104153	SCREW PTP M4x15(CR)	4		HANDLE/BUMPERx4
70	9112063	SCREW PTF M2.6x6(CR)	2		KNOB HOLDER/HOLDERx2
71	9153050	SCREW PTPW 3x5(MC)	2		A PCB/BAR ANT HOLDER x2
72	9153103	SCREW PTPW M3x10(CR)	2		HANDLE RUBBERx2
73	9154101	SCREW PTPW 4x10(ZK)	8		WIRE TUBEx2 SPEAKERx4 TRANSx2
74	9162081	SCREW PTB 2.6x8(ZK)	9		SP.RING/F CABI.x4 HOLDER/F CABI.x3 LAMP COV./F CABI.x2
75	9163101	SCREW PTB 3x10(ZK)	9		LED PCB/F CABI.x4 A PCB/F CABI.x4 POWER CORD/B COVERx1
76	9163103	SCREW PTB M3x10(CR)	6		B.COVER/BAT. CASSx4 F.CABI/BAT.CASSx2
77	9163123	SCREW PTB 3x12(CR)	4		RUBBER FOOTx4
78	9163201	SCREW PTB 3x20(ZK)	2		BAR ANT HOLDER/F CAB lx2
79	9164203	SCREW PTB M4x20(CR)	6		B COV./F CABlx6
80	9166083	SCREW PTB M6x8(CR)	4		F CABI.x4
81	9905400	E-RING ϕ 4mm	1		
82	9997404	C RING d= ϕ 7.4	1		

EXPLODED VIEW

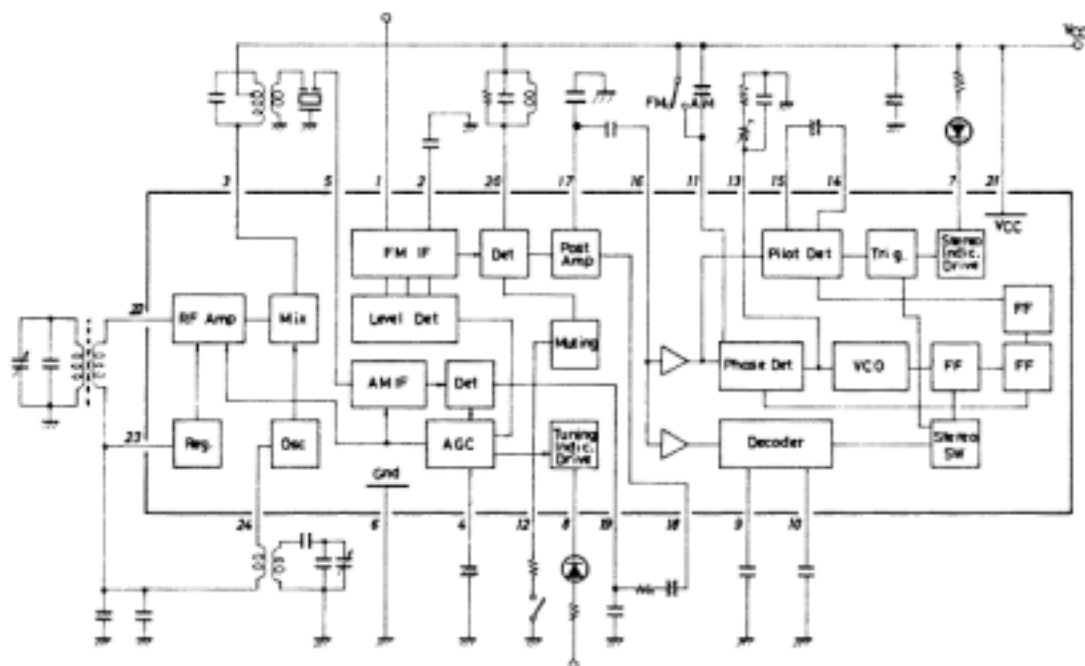


IC CIRCUIT BLOCK DIAGRAM

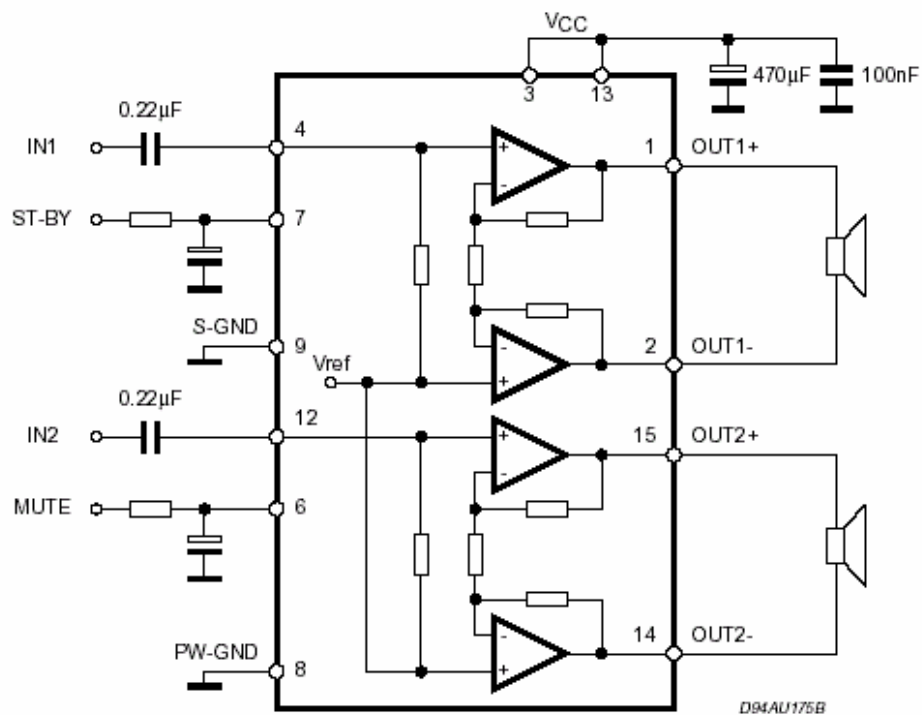
1. IC1 – LA1186N



2. IC2 – LA1805

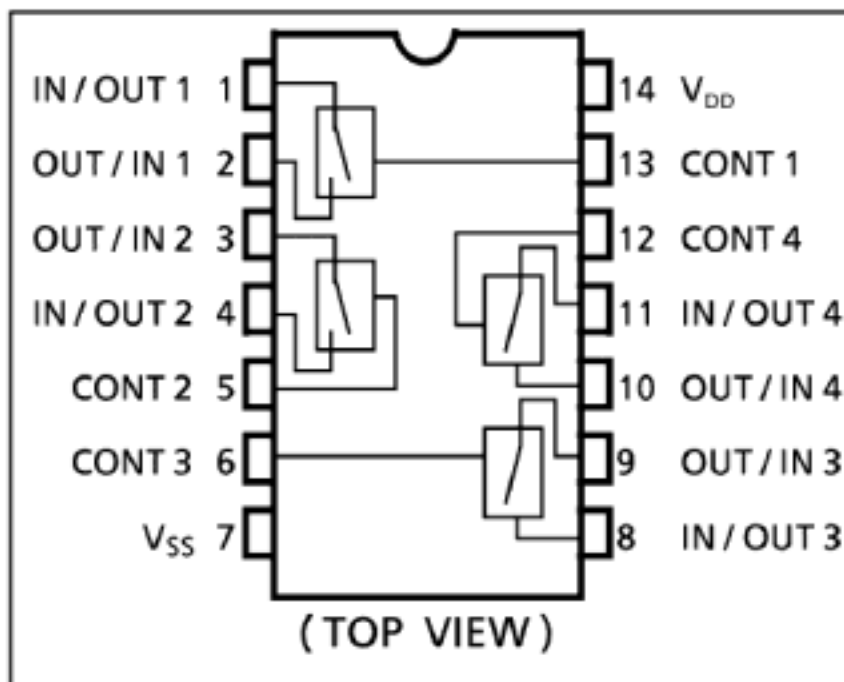


3. IC3 – TDA7266L

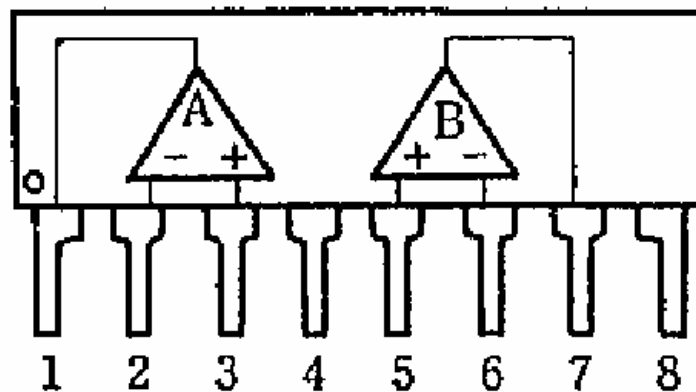


4. IC5 – TC4066BP

PIN ASSIGNMENT



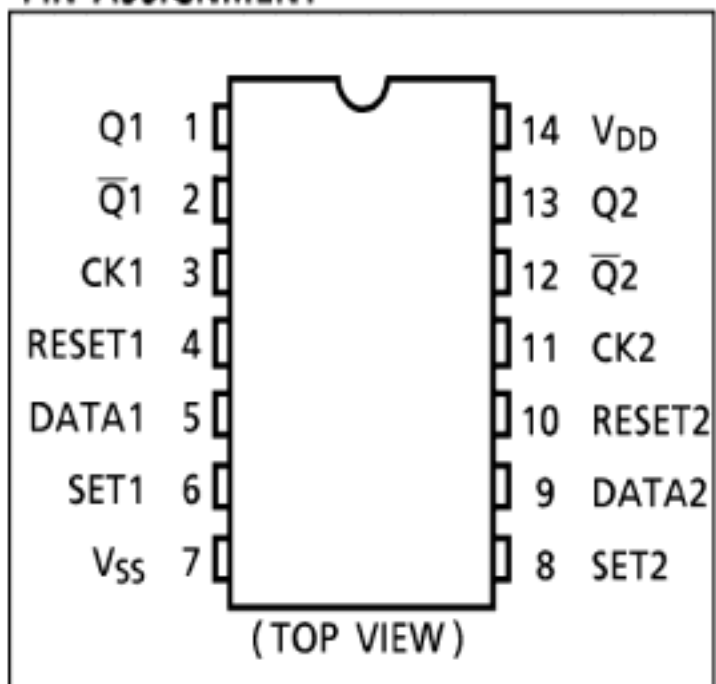
5. IC6 – NJM2100L



NJM2100L .

6. IC200 – TC4013BPN

PIN ASSIGNMENT



IC AND TRANSISTOR VOLTAGE CHART

DC IN 12V

IC1 – LA1186N

PIN	FM	AM
1	1	0
2	1.7	0
3	5.6	0
4	0	0
5	0	0
6	5.6	0
7	1.5	1.6
8	5	0
9	5.6	0

IC2 – LA1805

PIN	FM	AM
1	1.6	1.6
2	1.6	1.6
3	5.8	5.8
4	1	1
5	1.6	1.6
6	0	0
7	---	---
8	---	---
9	2.3	2.3
10	2.3	2.3
11	5.2	5.8
12	0.4	0.4
13	0	0
14	1.6	1.6
15	1.7	1.7
16	1.7	1.7
17	1.5	1.7
18	1.6	1.6
19	0.4	1.2
20	5.8	5.8
21	5.8	5.8
22	1.6	1.6
23	1.6	1.6
24	1.6	1.6

IC3 – TDA7266L

PIN	FM	AM
1	0	0
2	0	0
3	5	5
4	5	5
5	0	0
6	0	0
7	1.6	1.6
8	12	12
9	6	6
10	6	6

IC5 –TC4066BP

PIN	RADIO	MIC
1	3	3
2	3	3
3	3	3
4	3	3
5	5	0
6	0	0
7	0	0
8	0	0
9	0	0
10	3	3
11	3	3
12	0	0
13	0	6
14	6	6

IC6 –NJM2100L

PIN	FM	AM
1	3	3
2	3	3
3	3	3
4	0	0
5	3	3
6	3	3
7	3	3
8	6	6

IC AND TRANSISTOR VOLTAGE CHART

DC IN 12V

	IC200 – TC4013BFN	
PIN	LAMP OFF	LAMP ON
1	0	0
2	12	12
3	0	0
4	0	0
5	12	12
6	0	0
7	0	0
8	0	0
9	12	12
10	0	0
11	0	0
12	12	12
13	0	12
14	12	12

DC IN 12V

Transistor

		FM	AM
Q1	B	5.7	5.2
	C	5	5.9
	E	5.8	5.9
Q2	B	0	0.6
	C	5.7	0
	E	0	0
Q3	B	0.6	0.6
	C	0	0
	E	0	0
Q4	B	5.1	5.9
	C	5.7	0
	E	5.8	5.9
Q5	B	0.6	0
	C	0	0
	E	0	5.9
Q6	B	5.4	5.4
	C	5.9	5.9
	E	6	6
Q7	B	0.6	0
	C	0	0
	E	0	0

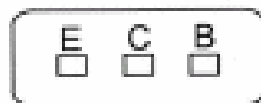
		RADIO	MIC
Q9	B	5.8	5.4
	C	0	6
	E	6	6
		FM	AM
Q10	B	11.4	11.4
	C	6	6
	E	12	12
Q11	B	3	3
	C	6	6
	E	2.5	2.5
Q12	B	3.6	3.6
	C	6	6
	E	3	3
Q13	B	0.6	0.6
	C	0.5	0.5
	E	0	0
Q14	B	0.5	0.5
	C	9.6	9.6
	E	0	0
Q15	B	3	3
	C	0	0
	E	3.6	3.6

		FM	AM
Q200	B	1.1	1.1
	C	5	5
	E	0.6	0.6
Q201	B	1.1	1.1
	C	6	6
	E	0.5	0.5
Q203	B	1	1
	C	7	7
	E	0.3	0.3

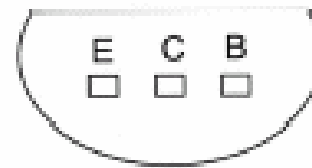
		RADIO	MIC
Q204	B	12	11.4
	C	0	4
	E	12	12
Q205	B	0	0.6
	C	0	0
	E	0	0

SEMICONDUCTOR LEAD IDENTIFICATIONS

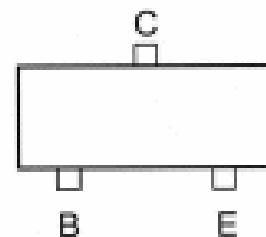
Transistors



2SD822



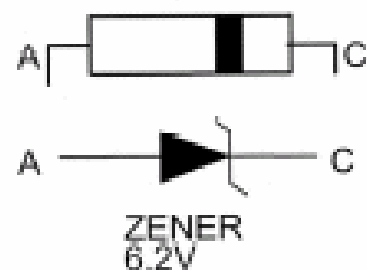
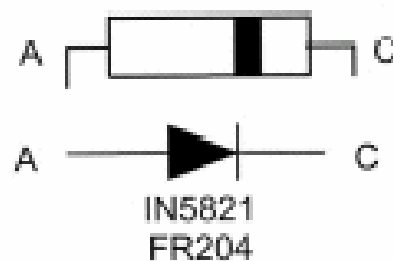
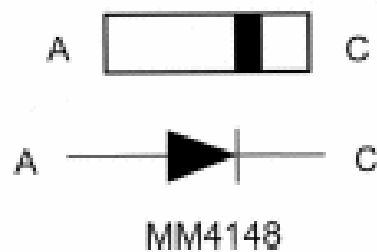
2SA1020
2SD655E



2SC1623
2SA812

(E:Emitter C:Collector B:Base S:Source G:Gate D:Drain)

Diodes



(A:Anode C:Cathode)

SCHEMATIC DIAGEAM

